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Invited Lecture

NEW CAPABILITIES OF AGN POLARIMETRY

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This talk is devoted to the memory of Dr Viktor Afanasiev and the last results of his work. All achievements highlighted here was gained thanks to his scientific intuition and working energy. In recent years, our team under Dr Afanasiev's supervision has discovered new possibilities for studying AGN in polarized light, which has been a "reboot" for some branches of optical researches. First, it was shown that all-night monitoring of BL Lac type objects with high accuracy and temporal resolution in polarized light allows us to estimate the size of an optical jet and the intraday variability is consistent with a simple geometric model of the jet. Second, the technique of AGN reverberation mapping in polarized light was reinterpreted. It was shown that in the case of Sy 1 galaxies with equatorial scattering, the delay of the polarized signal in a broad emission line allows us to estimate the size of the scattering region, which is closely related to the radius of dust sublimation. These approaches have already been successfully applied to several well-known AGNs and have produced quantitative results that will be presented in the report. At the same time, these methods are suitable not only for large instruments, as in the case of AGN spectropolarimetry but also for small telescopes.

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